Ginseng - a root just like a carrot?

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Summary

Ginseng has been used for thousands of years in the East as a 'tonic', and in recent years its use has extended to Western society. In the light of the current interest in complementary medicine, we summarize the effects and purported mechanisms of action of ginseng and present two vignettes of its use in relation to psychiatric patients, followed by a general discussion of the implications of the use of herbal products by these patients.

Introduction

A visit to the chemist or supermarket shows that there is currently renewed interest in herbal products and remedies, as evidenced by rows of herbal teas next to the teabags in the supermarket and the herbal products crowding the chemists' shelves. This interest in herbal products may be the consequence of a general disenchantment with conventional medicine and a turning towards alternative practitioners. The general public's perception is that because herbal products are natural they must be safe. Unfortunately, this is not true. Unwanted effects of a number of herbal products have long been recognized and, more recently, such subtle toxic effects as carcinogenicity, mutagenicity, and hepatotoxicity have been demonstrated for a number of herbal products[1].

Plant and mineral substances have been the basis of oriental and western pharmacopoeias for thousands of years. Most of these remedies have been superseded by a variety of manufactured and bio-engineered drugs, but a few (such as digoxin, morphine and quinine) still hold important places in the British National Formulary. There are a number of widely used drugs which have been developed this century from plant substances. These include: the coumarin anticoagulants such as warfarin; ergot derivatives such as ergotamine, ergometrine and bromocriptine; and the cytotoxics vincristine and vinblastine. Drug companies and research institutes after years of turning their backs on the plant world are now investing heavily in projects to test plants for pharmacoactive properties[2].

Ginseng is a good example of an ancient remedy (used for thousands of years in the East) for which a number of extravagant claims have been made including aphrodisiac and life prolonging properties. The response of the western scientific community to these claims has been to dismiss ginseng as a harmless health fad. However, in the last 30 years ginseng has been vigorously analysed and investigated and shown to contain various active constituents, including at least fifteen saponins, which have been named ginsenosides[3]. Ginseng has been shown to increase stamina in athletes[4] and concentration in wireless operators[5]. In animal studies, a number of different effects have been demonstrated for ginseng and its component ginsenosides, including: increasing stamina[6]; increasing adaptability to stress[7]; decreasing learning time[8]; decreasing aggressive behaviour[9]; and stabilizing sleep[10]. Various biochemical actions have been proposed for these effects of ginsenosides - the most consistent being a facilitating influence on the hypothalamic-pituitary-adrenal axis[11-13]. However, interactions with central cholinergic[14] and dopaminergic[15] mechanisms have also been demonstrated.

There have been recent accounts in the psychiatric literature of the psychological effects of a variety of plant derived substances including: cannabis[16]; instant coffee[17]; mauby bark[18] (the basis of a common beverage in the Carribean; khat[19]) the leaves of the East African shrub Catha Edulis; and nutmeg[20].

We very briefly outline two examples from our own experience where ginseng has been used by psychiatric patients. These examples are suggestive and illustrative and are not offered as conclusive evidence of the psychological effects of ginseng. In the first example, the mental states of the patients appeared to be particularly susceptible to change as a consequence of smoking ginseng. The second example illustrates a typical over-valuation of likely benefit and undervaluation of potential adverse effects of ginseng. We then discuss the implications of the use of ginseng and other herbal products by such patients.

Example 1

Mr A, a 37-year-old inpatient with a diagnosis of schizophrenia obtained a supply of herbal cigarettes of which ginseng was an active ingredient. These cigarettes are readily available in health food shops and when smoked have a characteristic aroma - not unlike that of cannabis. It was the smell of these burning cigarettes which brought their use to the attention of nursing staff. When asked, Mr A stated that he smoked the cigarettes for their reputed effects of 'increasing well being'. It then transpired that four other patients all with diagnoses of schizophrenia had followed Mr A's example and were regularly smoking ginseng herbal cigarettes which they claimed made them feel good. All these patients were noticed to have become generally irritable, uncooperative with their treatment programmes, and overactive with disturbed sleep. This change in their behaviour corresponded to the time they had been smoking the ginseng cigarettes and when they stopped smoking them, on medical advice, their behaviour was noticed to improve. There was no marked change in their psychotic symptomatology neither subjectively nor on review of their medical and nursing notes. All of them were on maintenance depot neuroleptic medication.

Example 2

Mr B is a 45-year-old man with a long-standing history of schizophrenia. His mother, prior to her death 5 years ago,

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was noted to be generally overinvolved and interfering with his medical management. In retrospect she appears to have been an eccentric if not frankly deranged lady. She wrote a number of letters to his consultants demanding changes in his treatment, including the prescription of ginseng. The following is an extract from one of her letters:

... B tells me he has not been given the *ginseng tablets* you agreed he could have ... there are several pounds worth of the valuable stuff in the bottle. I know from experience how it energizes the body. Will you be so kind as to trace the bottle together with the *A&D fish liver oil* capsules, which I am absolutely certain will help ... Ginseng is *a root* just like a carrot. There are no drugs whatsoever. You chew the carrot and the ginseng root and add to your health ...

Ginseng was not prescribed.

Discussion

These case vignettes do not demonstrate an unequivocal role for ginseng *per se* in the genesis of mental deterioration, but do illustrate: (1) the relevance of being alert to the potential effects of herbal use and ginseng specifically; and (2) the importance of taking a history of herbal use, particularly in patients already suffering from mental illness.

We were unable to find any accounts in the psychiatric literature of ginseng exacerbating or precipitating mental illness. However, in view of its purported stimulant nature we support the caution that 'in general, people who are highly energetic, nervous, tense, hysteric, manic or schizophrenic should not take ginseng'[21].

Although the case vignettes demonstrate no specific effects for ginseng we believe they raise a number of general points regarding herbal products of which all clinicians should be aware:

1 Plant extracts and remedies are widely available and contain a variety of pharmacoactive substances. Despite this, most (including ginseng) are classed as food supplements, and do not require a product licence[1]

2 Plant derived substances will often be used by psychiatric patients for mind altering effects - either sedative, stimulant or hallucinogenic and this will frequently be to the detriment of their mental state

3 The use of plant remedies and tonics may be strongly encouraged by friends and relatives of psychiatric patients, who may even administer these remedies under the eyes of the nursing and medical staff.

Conclusion

Ginseng and other plant remedies should not be dismissed as a harmless health fad nor condemned as dangerous mixtures of organic chemicals. Rather, a balanced view of plant remedies should acknowledge their historical importance, their usefulness and the fact that, unlike manufactured drugs, they usually contain a mixture of pharmacoactive substances which have complex interactions and whose combined effects will be difficult to predict.

We recommend that clinicians should be generally aware of peoples' use and misuse of plant substances and that they should specifically enquire about this when taking patients' histories. Further, clinicians should be as informed about the effects and side-effects of herbal products as they are about prescribed medicines and illicit drugs.

References

1 Consumers Association. Herbal medicines - safe and effective; *Drug Ther Bull* 1986;**24**:97-100

2 Godlee F. Medicinal plants: another man's poison. *BMJ* 1992;**305**:1583-5

3 Shibata S, Saito H. Some recent studies on ginseng saponins. In: *Proceedings of the International Gerontological Symposium, Singapore.* Lugano: Pharmatom, 1977:183-98

4 Brekhman II. *Zenshen.* Leningrad: Medgiz, 1957

5 Medvedev MA. The effect of ginseng on the working performance of radio operators. In: *Papers on the Study of Ginseng and Other Medicinal Plants of the Far East,* Vol 5. Vladivostok: Primorskoe Knizhnoe Izdatelsvo, 1963:86-95

6 Brekhman II, Dardymov IV. New substances of plant origin which increase nonspecific resistance. *Ann Rev Pharmacol* 1969;**9**:419-30

7 Bittles AH, Fulder SJ, Grant EC, Nicholls W. The effect of ginseng on lifespan and stress response in mice. *Gerontology* 1979;**25**:125-31

8 Saito H, Tschuiya M, Naka S, Takugi K. Effects of Panax Ginseng root on conditioned avoidance response in rats. *Jpn J Pharmacol* 1977;**27**:509-16

9 Yoshimura H, Wanatabe K, Ogowa N. Acute and chronic effects of ginseng saponins on maternal aggression in mice. *Eur J Pharmacol* 1988;**150**(3):319-24

10 Lee SP, Honda K, Ho-Rhee Y, Inoue S. Chronic intake of Panax ginseng extract stabilises sleep and wakefulness in sleep deprived rats. *Neurosci Lett* 1990;**111**(1-2):217-21

11 Hiai S, Yokayama H, Oura H, Yano S. Stimulation of pituitary adrenocortical system by ginseng saponins. *Endocrinol Jpn* 1979;**26**:661-5

12 Fulder S. Ginseng and the hypothalamic control of stress. *Am J Chinese Med* 1981;**9**:112-18

13 Filaretov AA, Bogdanova TS, Podvigina TT, Bogdanov AI. Role of pituitary-adrenocortical system in body adaption abilities. *Exp Clin Endocrinol* 1988;**92**(2):129-36

14 Benishin CG, Lee R, Wang LCH, Liu HJ. Effects of ginsenoside Rb-1 on central cholinergic metabolism. *Pharmacology* 1991;**42**(4):223-9

15 Watanabe H, Ohta-Himamura L, Asakura W, Matoba Y, Matsumota K. Effect of Panax ginseng on age-related changes in the spontaneous motor activity and dopaminergic system in the rat. *Jpn J Pharmacol* 1991;**55**(1):51-6

16 Rottanburg D, Robins AH, Ben-Arie O. Cannabis associated psychosis with hypomanic features. *Lancet* 1982;**ii**(8312):1364-6

17 Zaslove MO, Russell RL, Ross E. Effect of caffeine intake on psychotic inpatients. *Br J Psychiatry* 1991;**159**:565-7

18 Hassiotis A, Taylor J. Psychotic illness following 'Mabi Bark Tea' consumption. *Br J Psychiatry* 1992;**161**:404-7

19 Pantelis C, Hindler CG, Taylor JC. Use and abuse of khat (Catha edulis): a review of the distribution, pharmacology, side effects and a description of psychosis attributed to khat chewing. *Psychol-Med* 1989;**19**(3): 657-68

20 Brenner N, Frank OS, Knight E. Chronic nutmeg psychosis. *J R Soc Med* 1993;**86**:179-80

21 Fulder S. In: *The Tao of Medicine.* Rochester, Vermont: Destiny Books, 1987:298-9

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